

# Rejuvenating resilience in the agrarian livelihood of Western Indian Himalayan region - A water perspective



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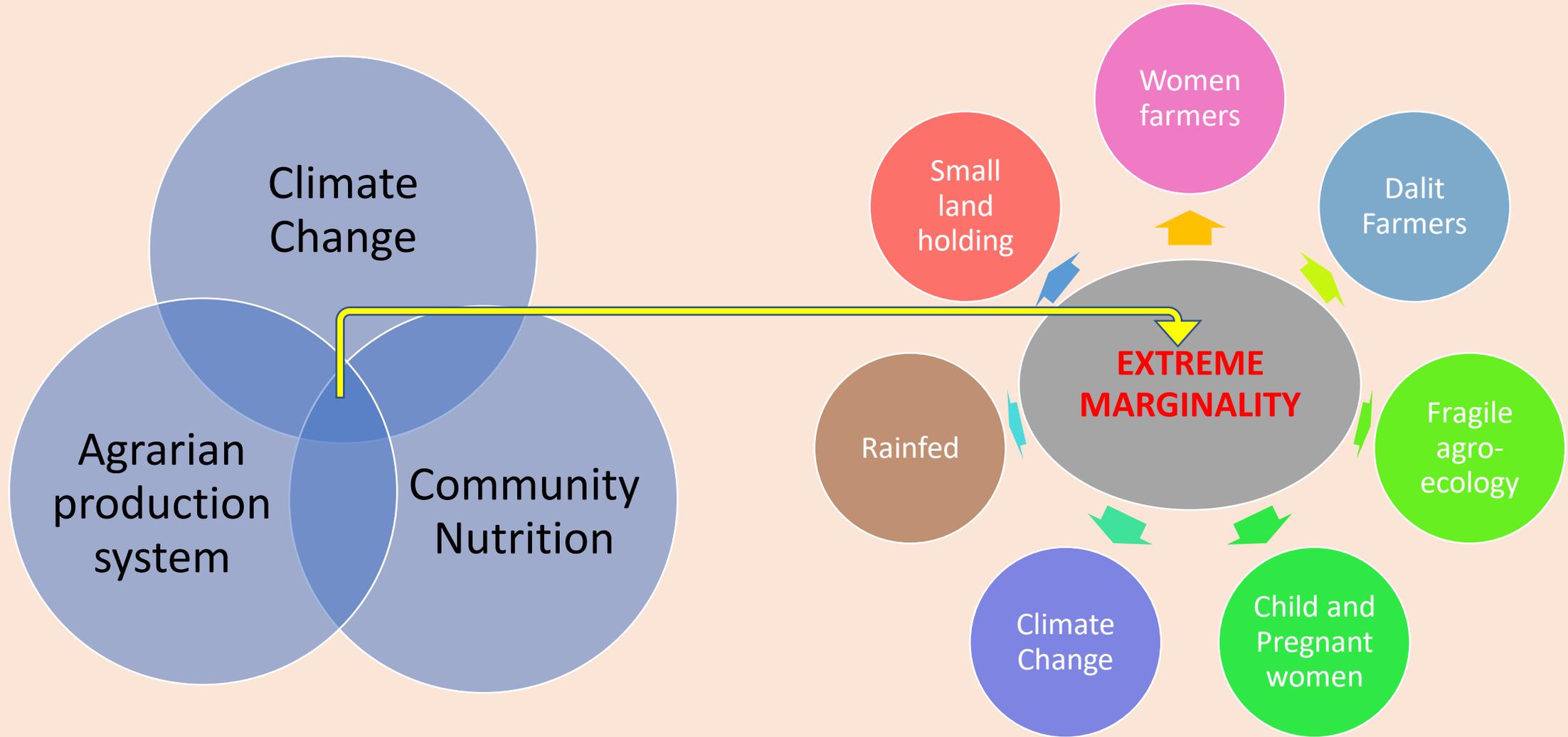
# Introduction

How climate change is impacting the production of Nutri cereals in the state of Himachal Pradesh

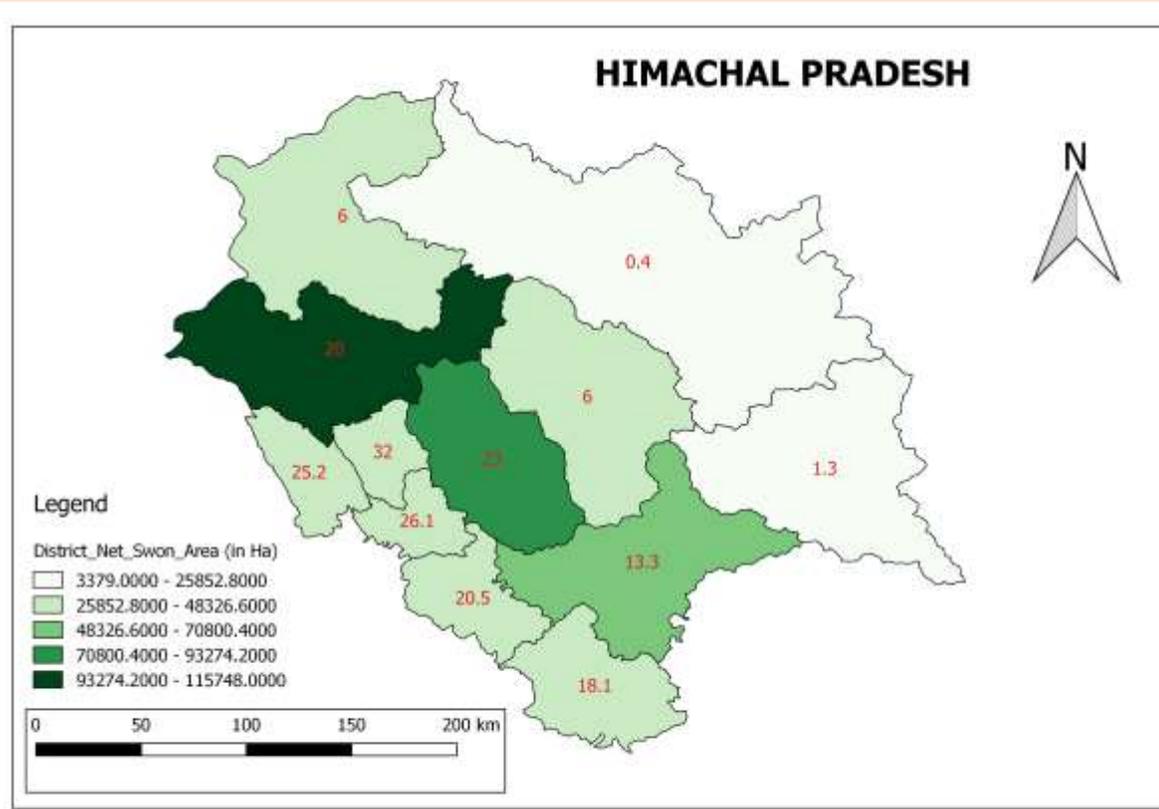
How protective irrigation can be enhanced through the mountain springs system to achieve the nutrition security and food sovereignty of the state with the preview of state financial viability



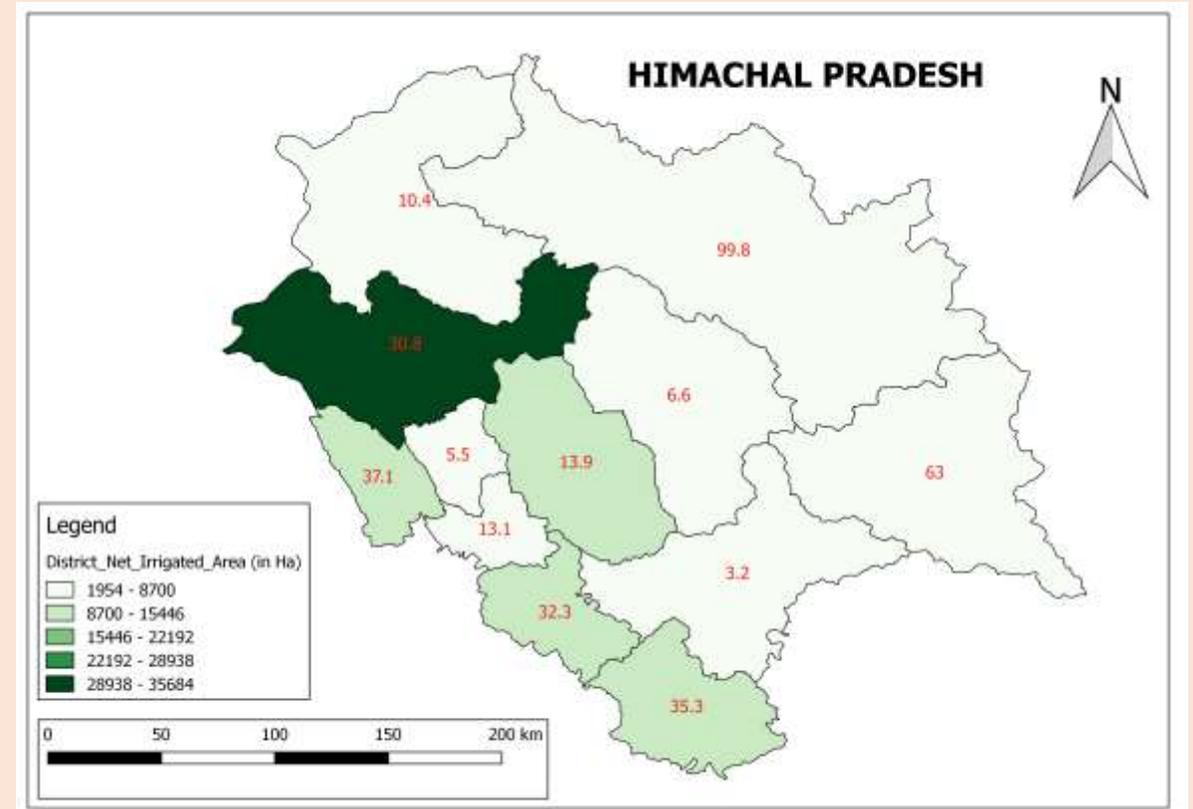
# Context



# Cultivation and Irrigation



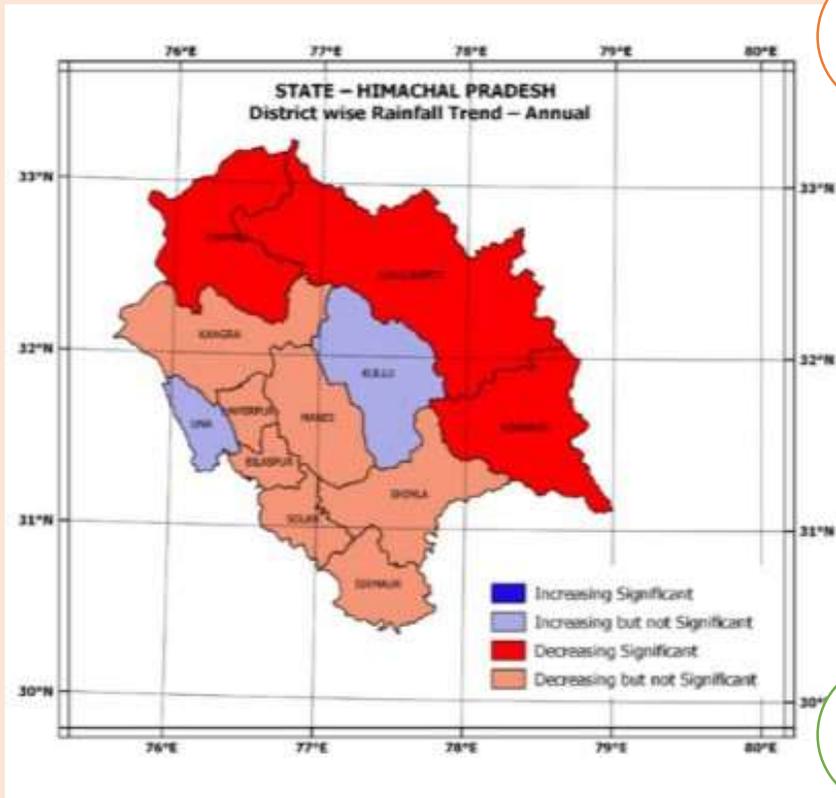
Only 10% of the state's total geographical area is under the any sort of agricultural or cultivational use.



Further, out of total NSA, only 13% is irrigated by any sort of mechanism. Which makes HP one of the most rainfed dependent state in the India.

Source: Statistical abstract of Himachal Pradesh 2019-20

# Precipitation – The changing trends (1989-2018)



Average annual rainfall has decreased significantly

Significant variation in the timing of the occurrence of precipitation

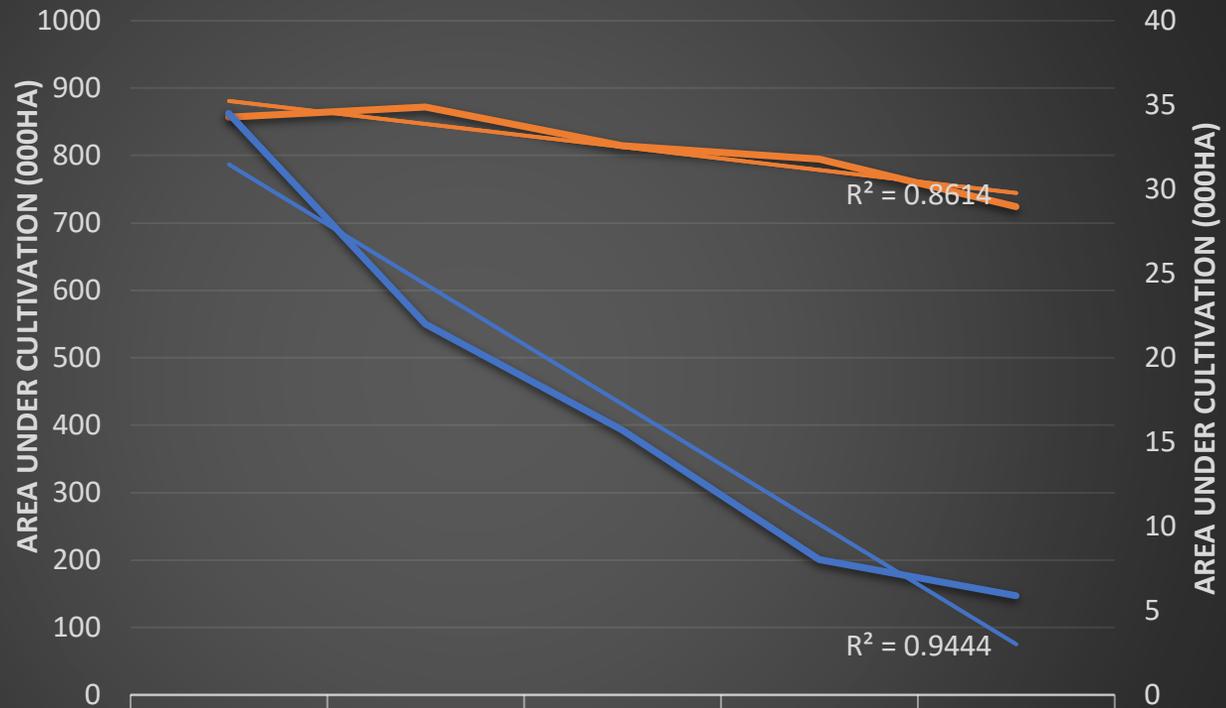
The average frequency of rainy days has significantly decreased

Significant variation in the timing of the occurrence of precipitation

The frequency of dry days has increased throughout the state

# Water and Agrarian Implications

Area under different crop cultivation



Total food grain	856.6	871.6	814.6	794.76	724.4
Ragi and Common Millets	34.5	22	15.7	8.04	5.9

- In the last four decades the area under the food crops (including vegetables) is continuously decreasing. The worse situation is with the nutritional crops such as millets which decrease to 1/6th of its total in the same period.
- Almost all prominent food crops in the state are cultivated under rainfed conditions making them prone to multistage challenges as well as desiring the special attention and attribution to the same.

# Nutrition security and food sovereignty

## The state of Hidden Hunger

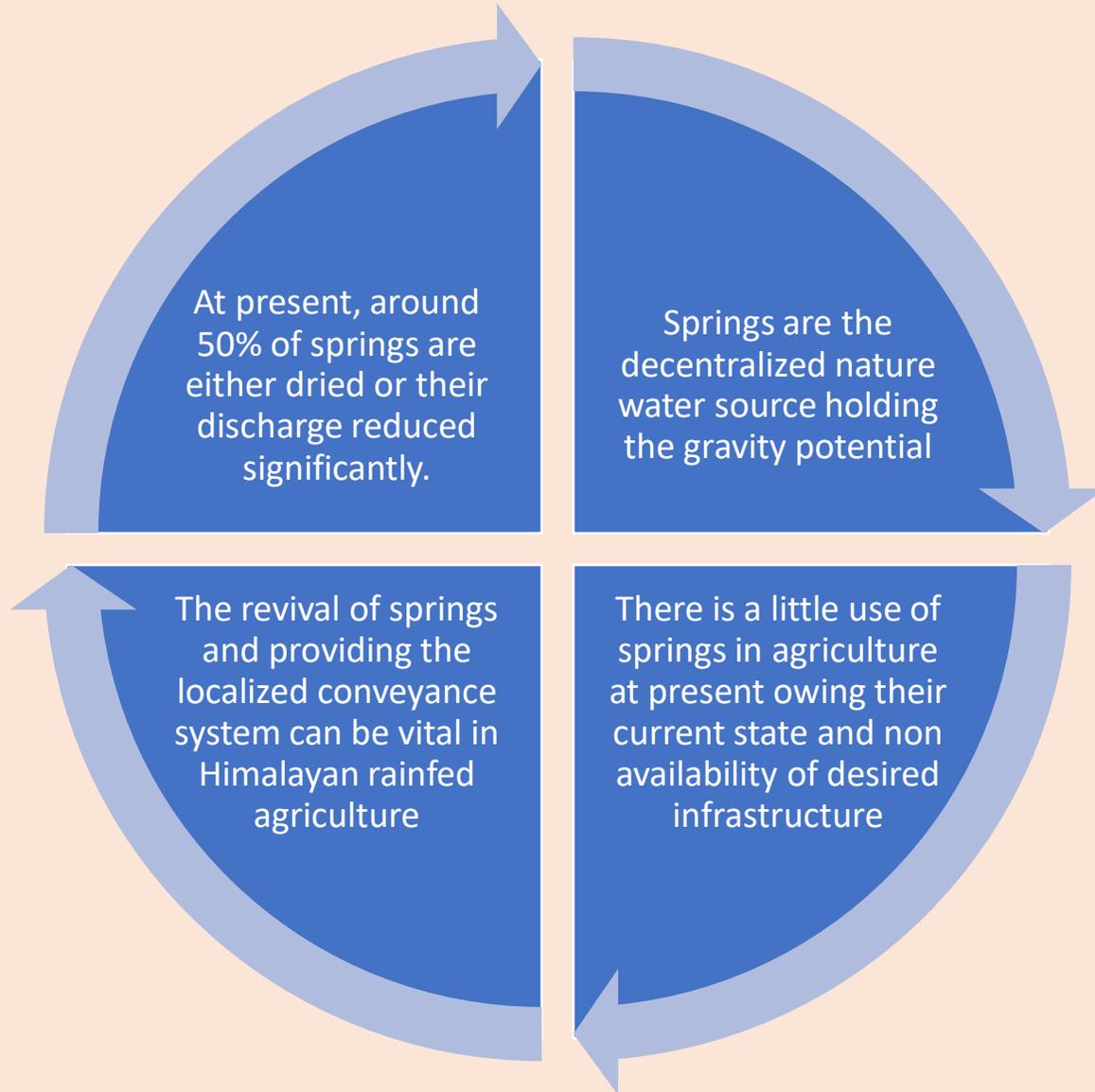
Indicators	NFHS - 5
Children under 5 years who are stunted (height-for-age)	30.8%
Children under 5 years who are wasted (weight-for-height)	17.4%
Children under 5 years who are underweight (weight-for-age)	25.5%
Children age 6-59 months who are anaemic	55.4%
Non-pregnant women age 15-49 years who are anaemic	53.4%
Pregnant women age 15-49 years who are anaemic	42.2%
All women age 15-49 years who are anaemic	53%
Men age 15-49 years who are anaemic	18.6%
Elevated blood pressure	23%

Himachal Pradesh is not only one of the states with the highest percentage of PDS using households (90%) in the country

The percentage of heavily dependent households (who get more than 70% of their grains from PDS) is greatest here, comprising 33.2% of the state's population.

A bigger chunk of state's food security is dependent on the imported grains from the neighboring states

# The Mountain Springs – A potential gap filler





# Securing crops for ensuring Nutrition

Providing protective irrigation to millets crops as a mechanism for enhancing the productivity as well as climate proofing



Himalayan millets consume almost 60% less water as compared to other major crops



Protective irrigation can help the millets in bearing the unusual longer dry spells



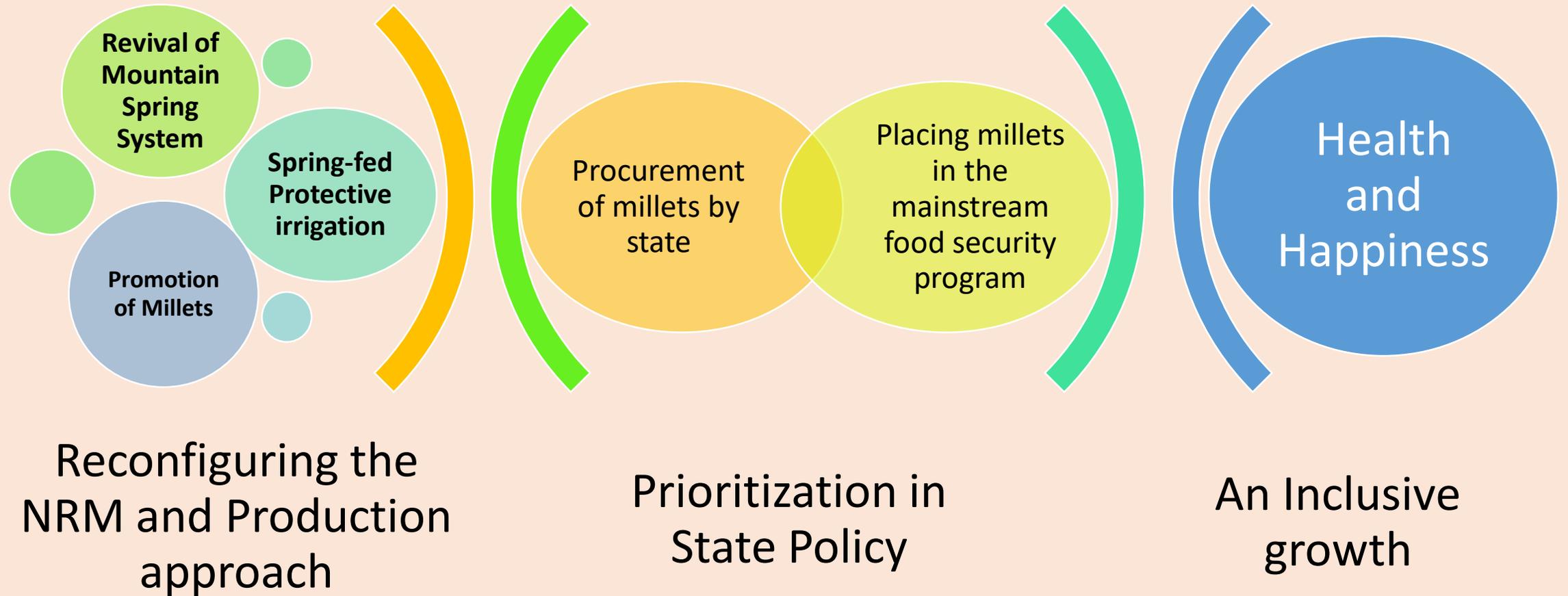
Critical stage irrigation can enhance the millets productivity by 20% to 30%



A spring based protective irrigation had a net potential of enhancing the community nutrition by 15% to 25%



# The comprehensive approach



# Thank you

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